Review Article

Race, Ethnicity, and Income Factors Impacting Human Papillomavirus Vaccination rates

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ABSTRACT

Background: Human papillomavirus (HPV) infection and cervical cancer disproportionately affect low-income and minority women. HPV vaccines have the potential to either reduce or exacerbate racial disparities in HPV-related diseases and cervical cancers, depending on the equitability of vaccine uptake.

Objectives: This review aims to identify barriers and facilitators of equitable uptake of HPV vaccination among low-income and minority girls. This review discusses factors related to race, ethnicity, and income that are associated with initiation and completion rates of the 3-dose HPV vaccine series and presents targets for intervention.

Methods: We reviewed relevant English-language literature to identify current vaccination rates and factors associated with vaccine uptake. Study findings related to race (black, Latino, Asian), and incomes were summarized.

Results: Current trends in the United States indicate low uptake among all adolescents, and that rates stagnated between 2011 and 2012. Low-income and minority adolescents are equally or more likely to start the HPV vaccination series than are white and higher-income adolescents, but are less likely to complete all 3 shots. Provider recommendation is a key factor in HPV vaccination, and minorities are less likely to report receiving recommendations for HPV vaccination.

Conclusions: As black, Hispanic, and Asian populations continue to grow in the United States over the next several decades, it is imperative that we not only improve HPV vaccination rates overall, but also focus on high-risk populations to prevent an increase in cervical cancer disparities. (*Clin Ther*. 2014;36:24–37)

Key words: ethnicity, HPV, human papillomavirus, income, race, racial disparities, vaccination.

RACIAL/ETHNIC AND INCOME DISPARITIES IN CERVICAL CANCER AND HUMAN PAPILLOMAVIRUS VACCINATION

Human papillomavirus (HPV) is ubiquitous,[1] but cervical cancer disproportionately affects poor and minority women. An estimated 12,000 women are diagnosed with cervical cancer annually in the United States,[2] and >500,000 women worldwide develop cervical cancer each year.[3] In the United States, cervical cancer incidence is nearly twice as high in counties with poverty levels >20% compared with those with poverty levels <10%,[4] and cervical cancer incidence and mortality are 25% and 95% higher, respectively, among blacks and 53% and 41% higher for Latinas compared with whites.[5] Rates of cervical cancer are inversely proportional to screening and treatment access, and poor and minority women face more barriers to health care access; therefore, higher rates of cervical cancer are found in US regions with large minority and impoverished populations.[6]

HPV causes nearly all cervical cancer,[1] with genotypes 16 and 18 accounting for ~70% of cervical

Accepted for publication November 6, 2013.
http://dx.doi.org/10.1016/j.clinthera.2013.11.001
0149-2918/$ - see front matter

cancer worldwide.[7] Low-risk HPV, genotypes 6 and 11, account for 90% of benign disease, such as genital warts.[7] Two vaccines are currently recommended in the United States: the quadrivalent vaccine (HPV4)* and the bivalent vaccine (HPV2).†[8,9] Both vaccines prevent up to 98% of HPV 16/18–related cervical dysplasia, the precursor to cervical cancer. The quadrivalent vaccine also prevents vaginal, vulvar, and anal dysplasia as well as genital warts, and is also indicated for males.[8,9] Since the licensures of these vaccines, vaccine-type HPV prevalence (HPV 6, 11, 16, and 18) decreased from 11.5% in 2003–2006 to 5.1% in 2007–2010 among teenagers aged 14 to 19 years, a decline of 56%; the prevalence of high-risk HPV decreased by 50%.[10] Routine vaccination is recommended at age 11 or 12 years, with catch-up vaccination through age 26 years.[8,9] The recommended vaccination age of 11 or 12 years was chosen to minimize the likelihood of HPV exposure before vaccination; 6.2% of adolescents in the United States initiate sexual activity before age 13 years.[11] Despite these recommendations, however, the overall rates of initiating and completing the HPV vaccination series among US adolescents are only 54% and 33% respectively,[12] which are statistically unchanged from 2011 to 2012.

Black and Latina, low-income, urban, and publicly insured adolescents initiate HPV vaccination at equivalent or higher rates than do their white, higher-income counterparts.[12] However, these groups are consistently less likely to complete the series than are white, suburban, privately insured, or affluent adolescents,[13–18] so their rates of complete vaccination are similar (**Figure**).[12] Universally high rates of HPV vaccination could substantially reduce disparities in cervical cancer, but lower rates of complete vaccination in vulnerable populations could widen racial/ethnic and socioeconomic disparities in cervical cancer in the future. This article reviews factors associated with HPV vaccine acceptability, initiation, and series completion among adolescents of different racial, ethnic, and socioeconomic groups in the United States.

MATERIALS AND METHODS

We reviewed relevant English-language literature to identify current vaccination rates and factors associated with vaccine uptake. Study findings related to race (black, Latino, Asian) and incomes were summarized.

*Trademark: Gardasil® (Merck Sharp & Dohme Corp., Ambler, Pennsylvania).

†Trademark: Cervarix® (GlaxoSmithKline, Research Triangle Park, North Carolina).

RESULTS

Factors affecting HPV vaccination among young black women

Approximately 14% of US women[19] self-identify as black or African American. Black women have higher rates of HPV infections than do women of other racial/ethnic groups, which increases the importance of early HPV vaccination for black girls.[20,21] The 2011, the Youth Risk Behavior report found that more black teens (60%) reported having sexual intercourse than did Latina (48.6%) and white (44.3%) teens.[11] One possible explanation is that black girls complete puberty earlier than do girls of other races,[22] which in turn may influence the age of sexual debut. Nearly 14% of blacks initiate sexual intercourse prior to age 13 years, compared with 7.1% of Latinas and 3.9% of whites.[11] Nearly one fourth of black teens reported 4 or more lifetime partners, compared with <15% of Latinas and whites.[11] At the time of college entry, 87% of black students were sexually experienced, with an average of 6 lifetime partners,[23] underscoring the importance of early vaccination to maximize vaccine efficacy.

Because parental permission is required for vaccination of girls under age 18 years, parental attitudes and behavior play a central role in vaccine uptake. **Table I** summarizes barriers faced by girls of different races/ethnicities. Over 70% of black mothers support HPV vaccination, and studies examining parents' intention to vaccinate their daughters found no racial differences in levels of parental support for vaccination.[11,24–27] Black parents' concerns related to a lack of information with respect to vaccine efficacy and safety, fear that the vaccine was experimentation on their daughters, cost, long-term side effects, and a belief that vaccination may increase early or unsafe sexual behavior have been implicated in the lack of vaccination acceptance in this population.[28,29] Perceptions that facilitated vaccination included the belief that vaccination was beneficial, provider recommendation, knowing peers who were vaccinated, and having had a personal experience with HPV-related disease.[28,30,31]

Despite high reported levels of HPV vaccine acceptability among blacks, actual HPV vaccination rates have been modest. In the initial years following HPV vaccine